N. A. C. A. BULLETIN

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IN THREE SECTIONS

Section I

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IN THIS ISSUE

A Method of Sales Analysis, by H. T. Hildebrandt 1001

Head Office Inventory Control, by Fred W. Krage 1010

Inventory & Production Control for the Corset Industry, by George W. Rood 1021

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EDITORIAL DEPARTMENT NOTE

In this Bulletin are presented three articles dealing with the subjects of sales analysis and finished stock control. That these two subjects are closely related will be apparent to anyone reading these articles. Sales analysis measures the demand for the various articles sold, and this demand is a controlling factor in determining the amount of finished goods to be carried in stock. The goal of finished stock control is, of course, to have sufficient stock on hand at each point of distribution to meet sales demand, but to do this with a minimum investment in inventories which eat up carrying charges and lead to possible losses from obsolescence. To achieve this goal in a company with numerous sales offices and with several warehouses in each of which a complete stock of merchandise must be carried, requires a most complete system of sales analysis and inventory control.

In our first article, H. T. Hildebrandt describes a method of sales analysis by the use of the peg board which has proven most effective in a drug manufacturing company. The author of this article was educated in the public schools of Elmira, New York City and Binghampton, New York. He left school to enter military service during the World War and spent about fifteen months in the 196th Aero Squadron. Returning from the war he spent four years in the Service Department of the International Business Machines Company, leaving this connection to become affiliated with Norwich Pharmacal Company, where he is at the present time Accountant in Charge of Sales Analysis, Payrolls and related work. Mr. Hildebrandt is a charter member of our Binghampton Chapter.

Our second article deals with head office inventory control in a company manufacturing oil well pumps and accessories. The author of this article is Fred W. Krage, who was educated at the University of Washington and the University of Southern California. For four years after his graduation, Mr. Krage was employed as an Accountant in the automotive industry by Don Lee of Los Angeles. In 1925 he aligned himself with the Axelson Manufacturing Company, Vernon, Cal., manufacturers of oil well pumps and accessories, as Chief Accountant and Office Manager, which position he holds at present. Mr. Krage has been active in our Los Angeles Chapter for the last eight years, having served as its President in 1931-32.

For our third article we turn to the corset industry where the great number of styles manufactured and the necessity for carrying a complete supply of sizes in each style tends to emphasize the importance of sales analysis and inventory control. The author of this article is George W. Rood, who is a graduate of Tufts College and a member of Phi Beta Kappa. He also saw service during the war, serving in France as Sergeant of the X-ray unit of Base Hospital No. 7. Returning to this country, he served for six years in various executive positions with the American Bosch Magneto Corp., following this with three years as Assistant Factory Accountant for Brown & Sharpe Manufacturing Co. He entered the sales field in 1929 with the Powers Accounting Machine Division of Remington Rand, Inc. At present he is the New Haven District Manager for this company. Mr. Rood is at present serving as Director of Meetings and Entertainment for the New Haven Chapter.

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MAY 15, 1935

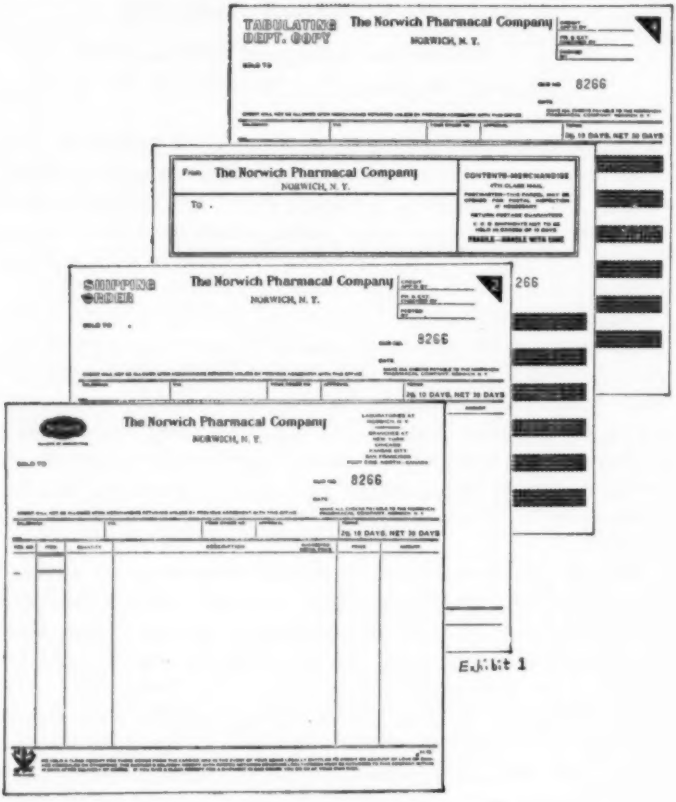
A METHOD OF SALES ANALYSIS

By H. T. Hildebrandt, Charge of Sales Analysis, Norwich Pharmacal Co., Norwich, N. Y.

THE sales analysis plan which I am going to explain is used by a drug manufacturing company selling direct to retailers through its own salesmen. Complete stocks are warehoused and selling offices maintained at five points within the United States. Each selling office does its own billing and keeps its own accounts receivable ledgers.

Copies of all billings to customers are forwarded to the Home Office daily for the purpose of making it possible to keep at that point detailed stock records of the almost five hundred items carried. Branch sales managers are furnished monthly with statements showing sales, quantity and value, of leading items by sales territories; also statements of cost of sales and gross profits by territories. Since each salesman has a definite territory, the same number can be used to designate a territory and the salesman who serves it.

Exhibit 1 pictures a set of our invoice forms which are prepared in quadruplicate. The original is the customer's invoice, the duplicate the shipping order, which is retained in the branch files, while the third and fourth copies are for tabulating purposes and are mailed to the sales analysis department at the Home Office. The upper portion of the first tabulating copy (third form) can be separated from the body of this copy and is designed for use as a parcel post label. The branch tabulating copies, representing a day's sales, are sent to the Home Office at the close of each business day, sorted by territories and are accompanied by a "Daily Report of Sales," Exhibit 2, which indicates by territories and in total the amount of billing for the day, the credits, if any, applying thereagainst, the net sales for the day and the accumulated net sales to date. A calculator operator immediately verifies these reported amounts with the actual billings received and computes the total quantities of units billed per territory. For example, where a group of invoices call for one gallon, six pounds, twelve tubes and eight tins, we add all of these together and establish a quantity control of twenty-seven units. The same operator also draws off and notes



on the daily report of sales the amount of transportation charges and excise tax billed.

Keeping the billings separated by territories (i. e. salesmen), they are now cut up into strips of unit media, each cut strip showing one line of typing. This explains the blocked out printing on our tabulating copies. The billing machines are set to double space and on the tabulating copy every other line is blocked out on the first sheet and the alternate lines of the second sheet. This gives us, when cut, a strip of sufficient width to be conveniently handled.

DAILY REPORT OF SALES BILLING

NEW YORK OFFICE DATE

TER NO	SALESMAN	GROSS SALES	RETURNS	NET SALES	ACCUMULATED NET SALES
303	Jobbers				
304	Office				
305	Office				
306	Eichin				
307	Dolan				
308	Atlanta Economy Drug				
309	Weismann				
310	Byrnn				
311	Phelan				
312	Shrebnik				
313	Crane				
314	Kenney				
319	Goepper, Sr.				
320	Goepper, Sr.				
321	Eichin				
323	Glass				
324	P. E. Schmitt				
325	Richman				
326	Higgins				
327	Paskow				
328	Seidenstein				
330	Kern				
331	Blum				
335	Hewden				
336	Flynn				
337	Nesbitt				
338	Schmitt, Wm.				
340	Hostelley				
341	MacFarland				
342	Philadelphia				
343	Hostelley				
344	Bryan				
345	Smith				
348	Taylor				
350	Brooks				
351	Thaxton				
352	Bundy				
353	Civil				
354	Milton				
355	Vacant				
356	McCall				
DOMESTIC TOTAL					
	Export				
EXPORT TOTAL					
TOTAL N. Y. O.					

EXHIBIT 2

The cutting is done on any standard trimming board, similar to those used by photo finishers and stationers.

The cutting of the tabulating copies gives us a bundle of strips for each territory, as shown in Exhibit 3. Each bundle is sorted by

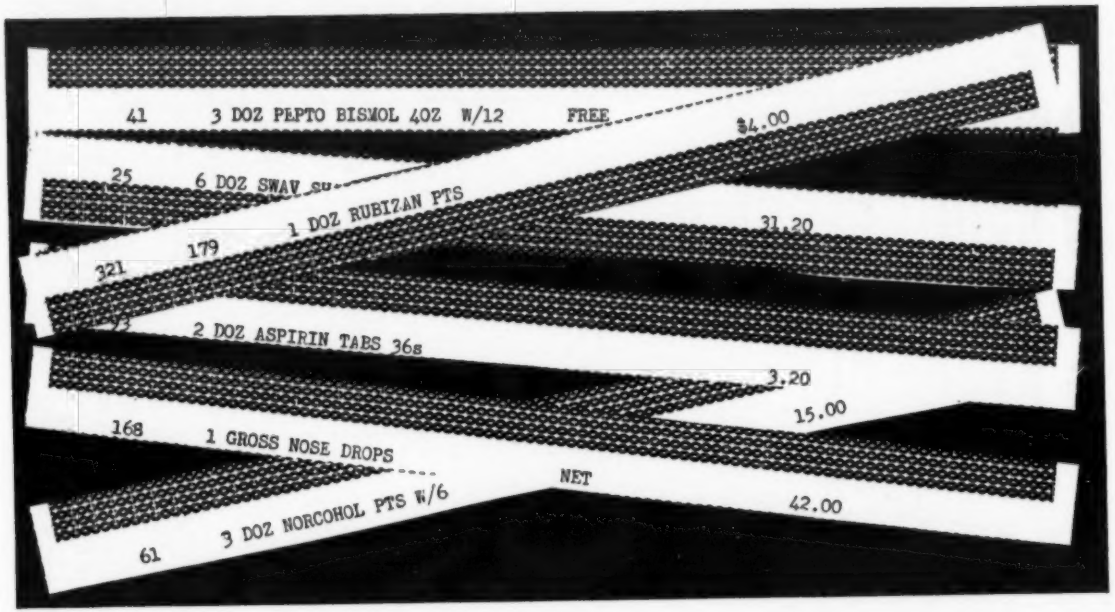
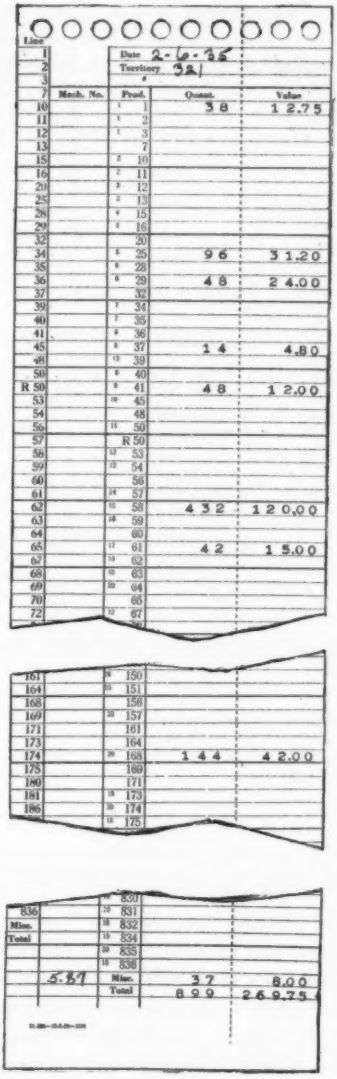

41
3 DOZ PEPTO BISMOL 4OZ W/12
FREE
$4.00
25
6 DOZ SWAV SU
1 DOZ RUBIZAN PTS
321
179
31.20
2 DOZ ASPIRIN TABS 36s
3.20
15.00
168
1 GROSS NOSE DROPS
NET
42.00
61
3 DOZ NORCOHOL PTS W/6

EXHIBIT 3



Line	Mach. No.	Prod.	Quant.	Value
		Date 2-6-35		
		Territory 321		
10		1 1	38	12.75
11		1 2		
12		1 3		
13		7		
15		2 10		
16		2 11		
20		3 12		
25		3 13		
28		4 15		
29		4 16		
32		20		
34		5 25	96	31.20
35		6 28		
36		6 29	48	24.00
37		32		
39		7 34		
40		7 35		
41		8 36		
45		8 37	14	4.80
48		13 39		
50		9 40		
R 50		9 41	48	12.00
53		10 45		
54		48		
56		11 50		
57		R 50		
58		12 53		
59		13 54		
60		56		
61		14 57		
62		15 58	432	120.00
63		16 59		
64		60		
65		17 61	42	15.00
67		18 62		
68		19 63		
69		20 64		
70		65		
72		19 67		
151		14 150		
164		15 151		
168		158		
169		20 157		
171		161		
173		164		
174		20 168	144	42.00
175		169		
180		171		
181		18 173		
186		20 174		
		18 175		
		14 830		
836		20 831		
Misc.		18 832		
Total		19 834		
		20 835		
		16 836		
	5.87	Misc.	37	8.00
		Total	899	269.75

EXHIBIT 4

Daily Sales by Salesman
(posted from unit media)

Line							
1		Date	2-6-35	2-6-35	2-6-35	2-6-35
2		Territory	303	314	326	335
3						
7	Mach. No.	Prod.	Quant.	Quant.	Quant.	Quant.
10		1 1			42	
11		1 2				
12		1 3	178	156		28
13		7				
15		3 10		3	1	
16		3 11				
20		3 12				
25		3 13				
28		4 15		1		
29		4 16			14	
32		20	3	24		
34		5 25			60	16
35		6 28				
36		6 29	156	16	8	16
37		33				
39		7 34		14		
40		7 35				
41		8 36	320	14	14	28
45		8 37				
48		10 39	1	1		
50		8 40		144		
R 50		8 41	168	112	48	16
53		44 45				16
54		48				
56		11 50		28		
57		R 50		24		
58		12 53				16
59		13 54				
60		56				
61		14 57	6		108	42
62		15 58				
63		16 59				
		60		14		

834		15 822				
835		15 830		12	116	
836		15 831			1	
Misc.		15 832				
Total		15 834				
		20 835				
		15 836				
	.09	Misc.	1	72	9	117
		Total	1,468	780	465	295

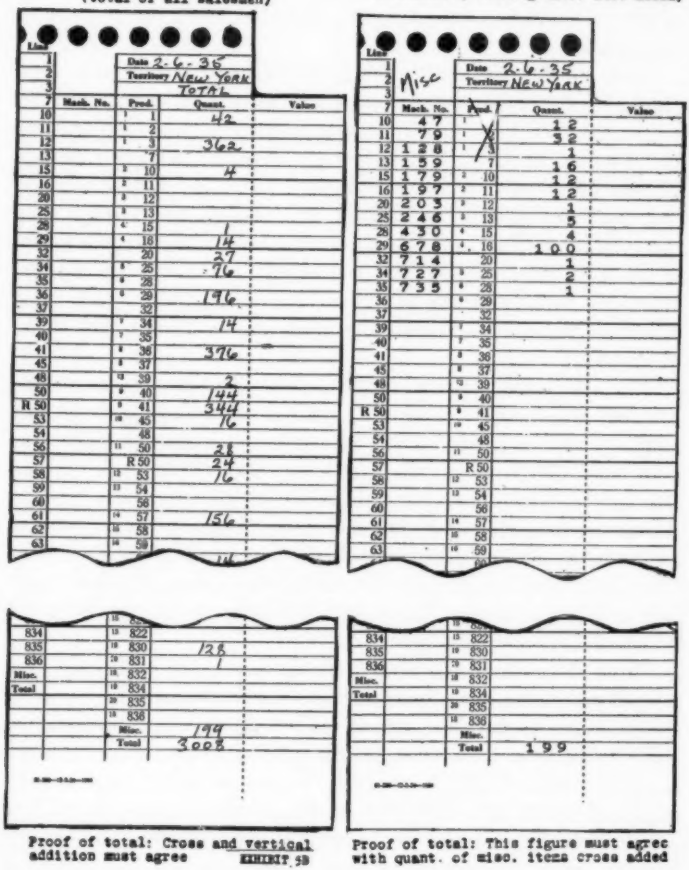
These totals must agree with predetermined quantities and values as shown on Daily Report of Sales

EXHIBIT 5A

item number and passed to the posting clerk, who inserts in her machine a salesman tape, Exhibit 4, and proceeds to post thereon total quantities and values for each product sold as indicated by the unit media or cut strips. The posting machine automatically accumulates a total for quantity units and values and this total is printed on the last line of the tape. You will note that the next to the last line on the tape reads: "Miscellaneous." Into this classi-

Daily Branch Sales
(total of all salesmen)

Daily Branch Sales of Misc. Items
(obtained by listing misc. unit media)



Proof of total: Cross and vertical addition must agree EXHIBIT 5B

Proof of total: This figure must agree with quant. of misc. items cross added

fication we throw everything for which the product number is not printed on the tape; this being our group of least active items. The unit media representing the miscellaneous group for each territory is cost priced and the total cost written on the tape to the left of the word "Miscellaneous."

The checking clerk next takes the posted tapes, together with the unit media, and verifies the tape totals with the predetermined

quantities and values for each territory as shown on the daily report of sales. These two sets of figures should agree if no errors have been made.

When all the salesmen's tapes for a particular branch have been checked out, they are spread on a peg board and quantities only are cross-added to form a total tape which represents the sales of this branch for that particular day. The cut strips for miscellaneous items are now thrown together, sorted by product number, and quantities recorded on another tape, totaled, and checked as to quantity total. This tape and the cross-added branch tape are sent to the stock record department and serves for the relief of physical inventory records. Exhibits 5A and 5B on pages 1006 and 1007 illustrate the way in which the peg board is utilized in the above procedure.

The individual salesman tapes are now filed by territory number and at intervals during the month a number of tapes for any territory may be spread on the peg board and accumulated into one total tape. We usually find it necessary to make at least four accumulations each month for each salesman. Then, at the end of the month we have, for each salesman a single tape which represents his monthly net sales. I say net sales, because all credit memorandums come through and are handled in exactly the same manner as invoices except that they are posted in red and deducted from sales when cross-added.

From these territorial total tapes, it is possible to prepare our monthly analysis form, Exhibit 6, for each salesman, by transferring the figures from the tape to the report. In this connection we have found that it simplifies the compilation of this report to have printed besides the product number on our salesman's tape a small figure denoting the exact line on our finished report where this product should appear. As a matter of interest these reports are usually finished within three days of the time the last billing is received by us.

To arrive at the cost of sales, we use a blank salesman's tape on which is shown the unit cost of each item. By pegging this besides each one of the monthly salesmen's tapes, a calculator operator can, in a reasonably short time, compile a finished report showing cost of sales, gross profit and percentage of gross profit by territories and sales divisions.

MONTHLY ANALYSIS

(67-14)

SALESMAN_____ TERRITORY NO._____ MONTH OF _____, 19__

THIS MONTH QUOTA $	CALLS MADE	CREDIT MEMOS	$
THIS MONTH SALES $	ORDERS TAKEN	COLLECTIONS	$
TO DATE QUOTA $	SALES BOOKED $	NEW ACCOUNTS	
TO DATE SALES $	AVE. SALE PER ORDER $	$100.00 DAYS	
		BLANK DAYS	

Catalogue No.	ITEMS QUOTA'D		QUOTA	LINE	QUANTITY	AMOUNT
1	UNGUENTINE	50c TUBES		1		
10	UNGUENTINE	POUNDS		2		
12	UNGUENTINE	5 POUNDS		3		
18	UNG. REC. COMES	12's		4		
25	SWAV w/UNGUENTINE			5		
29	NOIFORMS	12's		6		
35	AMOLIN	2 OZ.		7		
37	AMOLIN	4 OZ.		8		
41	PEPTO BISMOL	4 OZ.		9		
45	RESPAMOL	4 OZ.		10		
50	EEMACOL	4 OZ.		11		
53	NOBOL AGAR	PTS.		12		
54	NOBOL AGAR	6 OZ.		13		
57	MILK OF MAGNESIA	4 OZ.		14		
58	MILK OF MAGNESIA	PTS.		15		
59	MILK OF MAGNESIA	QTS.		16		
61	NOR-CO-HOL	PTS.		17		
62	COD LIVER OIL—PL. & MINT	QTS.		18		
63	COD LIVER OIL—PL. & MINT	4 OZ.		19		
64	COD LIVER OIL—PL. & MINT	PTS.		20		
70	COD LIVER OIL TABLETS	40's		21		
75	COD LIVER OIL TABLETS	100's		22		
130	SUN TAN OIL	Small		23		
140	SUN TAN OIL	Medium		24		
151	SUN TAN OIL	Large		25		
100	AMOLIN CREAM	50c		26		
105	AMOLIN CREAM	30c		27		
117	PEPTANS			28		
160	NOSE DROPS			29		
180	NORDENTA			30		
181	NORDEX	35c		31		
				32		
				33		
				34		
				35		
Notes						
					TOTAL	

EXHIBIT 6 (Triplicate form)

This work which I have outlined is all done by four persons with the aid of two key-driven calculating machines and one electric posting machine. These people operate as a group on a standard task and bonus system and are all very happy about it. While at the start we guaranteed them their normal earnings, they have

never failed to earn a bonus, which averages around 10%. To rate 100%, our standards call for the cutting of invoices into strips at the rate of 770 strips per hour, the sorting of these strips at the rate of 960 per hour and the posting of 1,190 strips per hour. Our 1934 volume handled was 161,350 invoices consisting of 641,617 items or an average of better than 50,000 items per month.

HEAD OFFICE INVENTORY CONTROL

By Fred W. Krage, Chief Accountant,
Axelson Manufacturing Co., Vernon, Calif.

IN ORDER to make my discussion of this subject as concrete as possible, I am going to take the privilege of speaking about a system that is in actual use by the company with which I am connected. In many respects our method of inventory control is unique but possibly from this uniqueness you may get some ideas applicable to your own organization.

First, allow me to introduce the company that is to be under discussion. This company manufactures oil well pumps, oil well sucker rods and accessories. These products constitute approximately 80% of our production. The products are manufactured in three plants, the main plant and administrative offices being located in Southern California. Shipments are made to every oil field in the world.

Methods of Distribution

There are three distinct methods of distributing these products: through company-owned stores, dealers' stores and direct factory shipments. Inventories of finished goods are maintained in fifty-two different localities. As a control for these sales stores or distribution points, divisional sales offices are maintained at strategic points. For example, for the Mid-Continent section of the United States, sales offices are maintained at Tulsa, Okla.; for the Eastern division, i.e., East of the Mississippi, sales offices are maintained at Bradford, Pa.; and for the Rocky Mountain division, the sales offices are maintained in Casper, Wyo.

Three Types of Sales

Due to the three methods of distribution there are, of course, three distinctly different types of sales: first, all merchandise shipped to a company-owned store is shipped on a consignment basis. Second, shipments to dealer stocks are complete sales and are priced and billed the same as to a customer. Third, a direct sale to a customer, as in the case of export sales, are also priced and billed as complete sales.

All orders first pass through the hands of the divisional sales office. For example, an order received by a salesman from a Mid-Continent dealer is forwarded to the Tulsa sales office. This office writes up the order on a standard form which is used by all sales offices and forwards same to the factory which is to make the delivery. Copies of the original order are forwarded to the administrative offices if delivery is not to be made from the main plant. Regardless of which factory fills the order, upon the completion of the shipment the factory shipping department form is forwarded to the administrative offices for billing. This means that all invoicing is done from one central point.

In addition to this, on sales which are made direct to customers from company-owned stocks in company-owned sales stores, the original of all sales are forwarded daily to the administrative offices where all records are maintained for all branches, and we repeat, where all invoicing is done for all shipments or sales.

Material Control Guides

The administrative offices, which are located adjacent to the main factory, use four major guides in this particular system of material control. First, there is what is known as the "perpetual Inventory Record"; second the "Master Stock Record," which is a record that carries quantities the same as the perpetual inventory record, but in addition carries all values; third a record which is known as the "Commodity Report." This report gathers the sales by units, broken down to the smallest possible unit and by division in which the sales are made. Fourth, there is the "Parts Book," which describes every item of manufacture first in numerical order by part number and second in alphabetical order by description.

The Parts Book

We will explain the function of these four major controls in the system by beginning with the fourth control, namely the parts book. At the end of each year a physical inventory is taken of all stocks which are company-owned. Inventory tickets, at the completion of the inventory, are forwarded to the administrative offices where they are sorted, priced and extended. The inventory tickets then become the basis for the parts book, i.e., all finished parts that are inventoried are arranged for the parts book set up. The items so inventoried are routed to the engineering department which ascertains the status of each part, i.e., whether standard, special or obsolete. Each inventory ticket is keyed. If the part is special an asterisk is placed immediately after the part number. If the item is found to be obsolete it is keyed by placing two asterisks immediately after the part number. If the item is standard in all respects the part number is without any notations.

The new parts book is then issued by correcting the last edition of the previous year's parts book in accordance with the findings of the engineering department.

The Commodity Reports

Let us leave the parts book for a minute and analyze the next factor of control, namely the commodity report. This report is made up by recording the sales of each day as the orders are received in the administrative offices, which means the complete breakdown of each part on the sale. Indiyidual cards (Exhibit 1) are used each carrying the part number and description of a particular item in the parts book. The cards are ruled off by divisional points and each article that is sold is posted on the cards and properly dated as to the month in which the sale was made.

High and Low Limits

Next there is a committee which has previously been appointed by the management which is known as the "High and Low Limits Committee." This committee is made up of four individuals, the production department being represented by the works manager, the sales department by the sales manager, the engineering department by the chief engineer and the accounting department by the

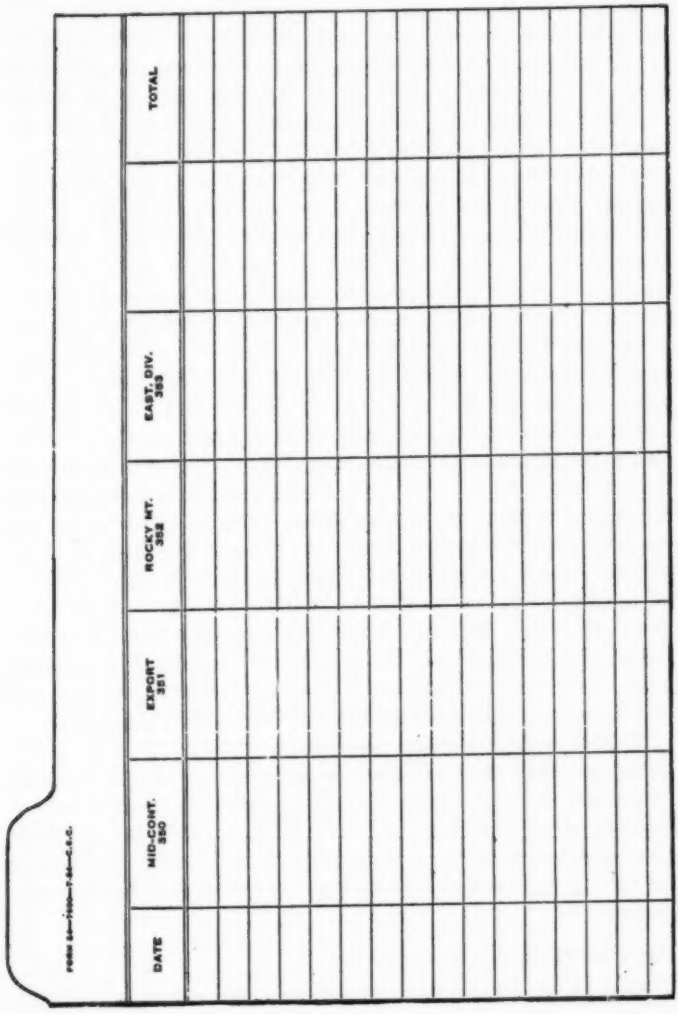


EXHIBIT 1

chief accountant. This committee meets immediately after each inventory and at least once every 90 days thereafter. The committee first considers the parts book previously referred to, which, as you will recall, records every article that is found in our finished goods inventory and in addition indicates the status of the article, i.e., whether standard, special or obsolete. Next they consider the commodity report previously referred to and which, if you remember, records the actual sales for the previous year. The committee then sets the high and low limits of production for each part, basing their high limit for each article inventoried on the total quantity sold during the previous 90 days as recorded on the commodity report, and setting their low limit as one month's supply in accordance with the average monthly sales for the previous six months as revealed by the commodity report. Where the parts book indicates the item is special, the chief engineer from engineering records will make his recommendation as to why the item is special and how it should affect the next 90 days sales, which would, of course, change the high and low limits, which were set in accordance with the previous formula. The same condition may exist and warrant the change of the high and low limits when an article is marked obsolete. Also the sales manager, from his records, may have available data which would warrant changing the high and low limits on account of an anticipated increase in the sales volume for a given part. Also the sales department may be influential in correcting the high and low limits when the condition is reversed, where the records of the sales department indicate that there will be a decrease in the sale of a given article over the next 90 days.

In other words the major departments of the business are represented and may challenge the management's decision to maintain inventories as based on the 90 days previous sales and reduce or increase the high and low limits as each department sees fit. However, each department head who challenges and corrects the formula for setting high and low limits must be responsible for that correction.

Perpetual Inventory Records

Next let us discuss the third and strongest control of the entire system, namely the perpetual inventory records. At the completion of the physical inventory, quantities are transferred from the inven-

AXELSON MANUFACTURING COMPANY
STOCK RECORD
FORM 41—10M

IN PROCESS				STOCK TRANSFERS 1.					STOCK TRANSFERS 2.					PROMISED		
DATE	REFERENCE	QUANTITY		DATE	REFER.	IN	OUT	BALANCE	DATE	REFER.	IN	OUT	BALANCE	DATE	QUANTITY	REFERENCE

REC.	
SHELF	
BIN	
BAR	
BIN	
ARTICLE	
PART NO	

EXHIBIT 2

tory tickets to the perpetual inventory records (Exhibit 2). There are some 28,000 finished goods inventory sheets required to record every item in the finished goods inventory. Immediately after the inventory is recorded on the perpetual inventory records the high and low limits, as set by the high and low limits committee, are also recorded on the perpetual inventory records. Each unit of product has a separate sheet in this record, which shows the quantity on hand at inventory and the high and low limits which must be maintained on each unit. Immediately after the perpetual inventory clerks records the issue of sufficient units to leave the balance at or under the low figure of the control, a manufacturing order is requested by the perpetual inventory records clerk for a quantity which will increase the balance of that unit to a figure not exceeding the high of the high and low limits control.

We have, in all of our discussion so far been speaking of finished goods only. At this point I would like to state that the raw material is, of course, controlled in the same manner as finished goods. If, for example, an order is issued for the manufacture of a certain item the perpetual inventory records clerk immediately refers to the raw material perpetual inventory records to ascertain if a requisition must be made out to cover the ordering of raw material to build up the raw material to the high limit. By using this method of perpetual inventory it is not necessary to pass requisitions, manufacturing orders, etc., through the hands of executives, who in many cases would merely guess in making a decision as to how many units to manufacture or how much raw material to requisition.

It is felt that the system is definite, based on actual facts and creates an endless chain of material records with definite controls which are checked at least every 90 days.

Routing of a Sales Order

To give you a picture of the value of the complete set-up of the aforementioned three systems of control we will spend a few minutes on the routing of a sales order as it is received from some one of our sales offices.

When the sales office in question receives the order they refer to a copy of the parts book which is kept up to date at all times.

They note that certain items on the order are marked, in the parts book, with an asterisk which signifies that the article in question is special. It is understood by the sales office that we will fill the order to the extent of our inventory balance at the price which they have recorded. The sales office also understands that if the inventory balance is not sufficient to cover the order that they will be advised to what extent the order can be filled and also what price must be charged for the remaining portion of the order, i.e., that portion which must be manufactured. It can readily be seen that this control on special units is very positive.

It is true that in some cases certain special items must be manufactured and sold at a price which may have been quoted previously, however these cases are the exception and in the majority of instances the salesman, who also has a copy of the parts book, has sold the merchandise, or rather this particular unit, with the understanding that we will fill the order at the price that the salesman has, up to the quantity in stock.

Let us assume that on the same order the divisional sales office discovers that a certain unit is marked with two asterisks in the parts book, signifying that the article is obsolete. The understanding with the sales office is identically the same as a special item except that when the order is received by the perpetual inventory records clerks and it is found that there is not sufficient stock to fill the order the divisional sales office is immediately notified and given their choice to correct the order as follows: either they will be supplied with the required number of units that the inventory is short, to completely fill the order at a new price, or they may order the new standard article which supersedes the obsolete article and which is checked and recommended by the engineering department.

Again let us point out the efficiency of such a control, which is bound to reduce obsolete stocks. It is impossible for an obsolete article to be manufactured since a manufacturing requisition could not be issued without the price department's approval on any article that is marked obsolete or special, for which an order is received where the quantity ordered is greater than the balance on hand.

We believe that the foregoing gives you a pretty good picture of the material control as it pertains to distribution.

Material Accounting System

The organization which we have been discussing has also installed recently a very good system of material accounting which, of course, is for manufacturing and internal use.

It was stated previously that all billing is handled by the one central billing point, namely the administrative offices. Also, it was stated that inventories and their costs were handled in the administrative offices. Let us keep this in mind and follow a sale, which has been shipped or delivered to a customer and the records forwarded to the sales accounting department, which is in charge of all pricing.

Material Transfer Tickets

All invoices are gathered each day and just prior to the pricing of the invoices a material transfer ticket (Exhibit 3) is made out for each item on the sale. This ticket shows all the information necessary to enable a journal entry to be made transferring the cost the goods sold from the various inventories to the various cost of sales accounts. These tickets are then delivered to the material aocounting department where a cost record is kept covering all inventories in all locations, properly priced. These inventory accounts are broken up first by the location of the stocks and second by the type of commodity. Since this control covers all inventories and stocks in all locations we have approximately 50% more control cards in this file than we have in our perpetual inventory book, or in other words approximately 40,000 to 42,000 cards. It is true that a great many of the items in this control are duplicated, since they appear again and again in various stocks.

Inventory Control Cards

Upon receipt of the material transfer tickets by the material control department they are posted daily by accounting machines to the inventory control cards. The operation is a standard operation with the particular type of machine which allows the extending of the quantities times the standard cost on the face of the material ticket, checking this transaction and then deducting from the control card (Exhibit 4) the quantities and values of that particular unit in accordance with the information on the material trans-

STOCK RECORD

AVERAGE PRICE						
UNIT						
DATE						
ADJUSTMENT						

DESCRIPTION

ACC'T. NO. CARD NO.

DATE	REFERENCE	UNITS		BALANCE	
		RECEIVED	ISSUED	UNITS	VALUE

DESCRIPTION

FORM 150 25M 12-33

AXELSON MANUFACTURING COMPANY

EXHIBIT 4

FORM 10 **MATERIAL TRANSFER**

SALE NO.	QUANTITY	PART NO. OR DESCRIPTION OF ITEM
DEBIT ACCT.	CREDIT ACCT.	

PRICE	VALUE	QUANTITY	DATE

EXHIBIT 3

FACTORS	QUANTITY	VALUE	DEBIT	CREDIT
INVOICE				
TRANSPORTATION			P. O. NUMBER	
SUB TOTAL				
ADJUSTMENT				
ON HAND			UNIT PRICE	INV. ADJ.
TOTAL				

DESCRIPTION

	VALUE	QUANTITY	DATE

EXHIBIT 5

FORM 21 **MATERIAL ISSUES No. 3719**

ORDER NO.	DATE	DEBIT	CREDIT
USED FOR			

QUANTITY	PART NO. OR DESCRIPTION OF ITEM

PRICE	VALUE	QUANTITY	DATE

EXHIBIT 6

fer ticket. All stock movements are handled in the same manner by the material accounting department. Invoices received covering purchase of material for finished goods or raw material accounts are broken down the same as sales to customers. An individual ticket (Exhibit 5), is used to break down the invoice and from that point is handled identically the same as the foregoing material transfer ticket.

Stockroom requisitions (Exhibit 6), which are issued to the stockroom for authority to deliver to orders in process either finished goods or raw material are also handled in the same identical manner.

It can be seen there is considerable time spent on the typing of these tickets which are required for our particular method of material pricing. However, this is more than compensated for by the fact that once all material items are broken down on the tickets it is a simple matter of sorting these tickets daily for continuous runs on the various stock control accounts. Once the tickets are made and are ready for the accounting machine run the operation is so fast that, for the tremendous volume of tickets which are handled daily, one employee can post all debits and credits to the material control cards and definitely be in balance on the completion of each run. This simplifies the final journal entries necessary inasmuch as the run on the last day of the month need only be added to the accumulated total for the previous days in the month in order to have a complete journal entry to the general ledgers. This one feature of being able to close the month on not later than the second or third day of each month is, of course, of an immense value.

INVENTORY AND PRODUCTION CONTROL FOR THE CORSET INDUSTRY

By George W. Rood, District Manager,
Powers Division, Remington Rand, Inc., New Haven, Conn.

MANY lines of business producing style goods are confronted with a serious problem of inventory and production control. Inventories of finished stock and work in process must be kept at a minimum to avoid frozen capital and losses from obsolescence.

This is particularly true of the corset industry where it is not unusual to find a company manufacturing several hundred styles of garments with each style made in from fifteen to twenty sizes.

New garments are constantly designed and certain seasons of the year bring forth a flood of new styles. Each new style may or may not affect the manufacture of one or more of the old styles. Minimum manufacturing quantities must be maintained for each style and size to keep costs in line.

Although sales in a particular style may run uniformly, the sales in the sizes of that style may fluctuate rapidly from week to week and month to month. Yet a balanced inventory in sizes is the only means of filling customer's orders quickly and completely. Delay in filling orders or incomplete shipments cause cancelled orders and loss of customers.

The information necessary for a satisfactory control of inventory and production in the corset industry may be classified as follows:

1. Control of raw materials.
2. Control of cutting orders issued.
3. Control of work in process by production centers.
4. Control of customers orders, filled and unfilled.
5. Control of available stock.
6. Sales statistics.

To one part of each of the above, add a dash of sales and designing forecast, several parts of good judgment and one part of pure gamble. The results will be very satisfactory.

Since the variety of information necessary for control is usually scattered at several points, the first step is to centralize the information at one point. The procedure described in the following pages makes use of hand methods, punched cards and punched card accounting machines, visible index records and charts.

Customer's orders are checked for credit, name and address, special shipping and billing instructions, and each style is checked for the correct range of sizes, priced and coded for the production center in which it is manufactured. A sample order is shown in Exhibit A.

The orders then go to the punched card accounting machine operator who has arranged in a semi-circle on a desk before her, a

29123

OFFICE COPY

THE STYLE CORSET COMPANY
NEW HAVEN, CONN.

Ship to The X, Y, Z Co.
327 Beacham St.
Lynn, Mass.

Date Entered 1/9/35 Date of Order 1/10/35 Date to be Shipped Total Weight

Salesman Henderson Terms 2% 10 Via Strings Bkp. Routed Via

Customer's Order No. 7193 Dept. 4 Case Nos.

22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	48	50	52	S	M	L	Line - Style		Dozens	Price	Amount
												3		4																	6	950	7			
									2		2		3		3		1		1												5	1270C	12			

22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	48	50	52	S	M	L

SPECIAL INSTRUCTIONS

Bill to Above

Pairs Packed

Service
Postage
Insurance
Total

EXHIBIT A

A 1941B

EXHIBIT A

series of files. Each file represents a production center and contains a series of guide cards for each style and each size manufactured. On the desk in front of the files are stacks of prepunched cards. These prepunched cards are prepared on the punching machine at the rate of 100 cards per minute. Each stack of cards is punched for one quantity and there is a stack for each quantity up to one dozen pairs.

The first style on the order is No. 590, production center No. 6. It calls for three pairs of size 34 and four pairs of size 36. The operator picks up one 3 card and one 4 card, reaches to file No. 6 guide No. 950 and drops the 3 card behind the size 34 guide and the 4 card behind the size 36 guide.

Copies of cutting orders issued, reports of cutting, deliveries to stock, returned goods and cancellations are sent to the operator who punches a card for each style and size affected. The quantity is punched into the card to make the additions and deductions to or from the proper controls. The cards are tabulated by groups to obtain control totals for cutting orders, cutting, work in process, deliveries to stock, returned goods and cancellations. All the cards are then sorted by style and size and filed behind their guide cards in the previously mentioned card files.

The card files therefore contain at all times addition and deductions to the various inventory controls. Last minute information regarding any style can be furnished at a moment's notice.

Sample of the punched card is shown in Exhibit B.

Each day the filed cards for one or more production centers are passed through the tabulator and a tabulation, similar to Exhibit C, is automatically obtained. This report is printed in duplicate, one copy for the production center foreman and the other copy for posting to the visible index records and for use by the inventory control manager.

The visible index records are portable books, each containing 70 visible pockets, indexed by styles in numerical sequence. The styles are arranged in the books by lines (types of garments manufactured), rather than by production centers. Each visible pocket contains two cards and a chart which are exposed to full view on opening the pocket. A sample pocket is illustrated in Exhibit D1 and D2.

A clerk post to the lower card the grand totals for the style as

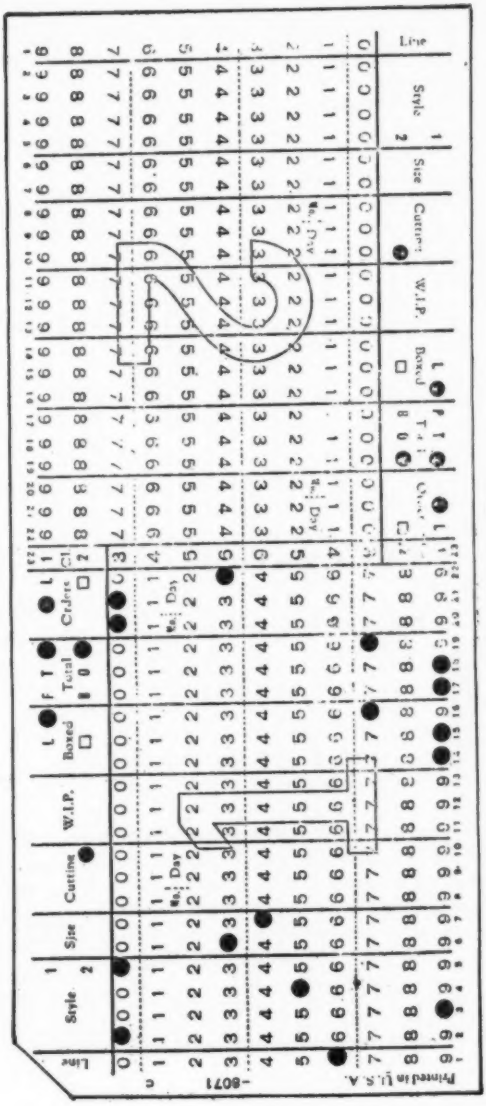

Printed in U.S.A.
-8071
Line
Style
Size
Cutting
W.I.P.
Boxed
Total
Order
Day

EXHIBIT B

INVENTORY CONTROL TABULATION AS OF 1/1/35

LINE	STYLE	SIZE	CUTTING ORDERS	WORK IN PROCESS	AVAILABLE BOXED	TOTAL AVAILABLE	ORDERS FOR MONTH	TOTALS BY STYLES CUTTING	W. I. P.	BOXED	TOTAL AVA.	ORDERS	
5	75	34			8	8	3						
5	75	33			24	24	2						
5	75	32		48	14-	34	38						
5	75	31		60	20-	40	52						
5	75	30	24	132	42-	114	119						
5	75	29	48	144	33-	159	135						
5	75	28	116	76	55-	137	158						
5	75	27	116	136	71-	181	155						
5	75	26	44	76	25-	95	89						
5	75	25		24	1	25	14						
								348	696	227-	817	765	

EXHIBIT C

EXHIBIT C

LINE | STYLE | DESCRIPTION — EXHIBIT D'

MO	TOTAL QUANTITY	N S/E	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
1933																																					
Dec.	292	36													32	18	30	27	62	29	54	16	24														
Jan.	330	36													40	22	40	24	67	38	61	22	26														
Feb	422	36													38	30	54	35	82	40	77	24	42														
Mar.	231	36													24	17	26	21	48	21	46	17	31														
Apr	208	36													22	16	24	16	45	17	38	18	32														
May	253																																				
Jun.	288																	etc																		
Jul.	194																																				
Aug.	157																																				
Sep.	196																																				
Oct.	294																																				
Nov.	436																																				
Year Total																																					
1934 Dec.	427																																				
Jan.																																					
Feb.																																					
Mar.																																					
Apr.																																					
May																																					
Jun.																																					
Jul.																																					
Aug.																																					
Sep.																																					
Oct.																																					
Nov.																																					
Year Total																																					

SALES - POSTED MONTHLY FROM TABULATION

EXHIBIT D1

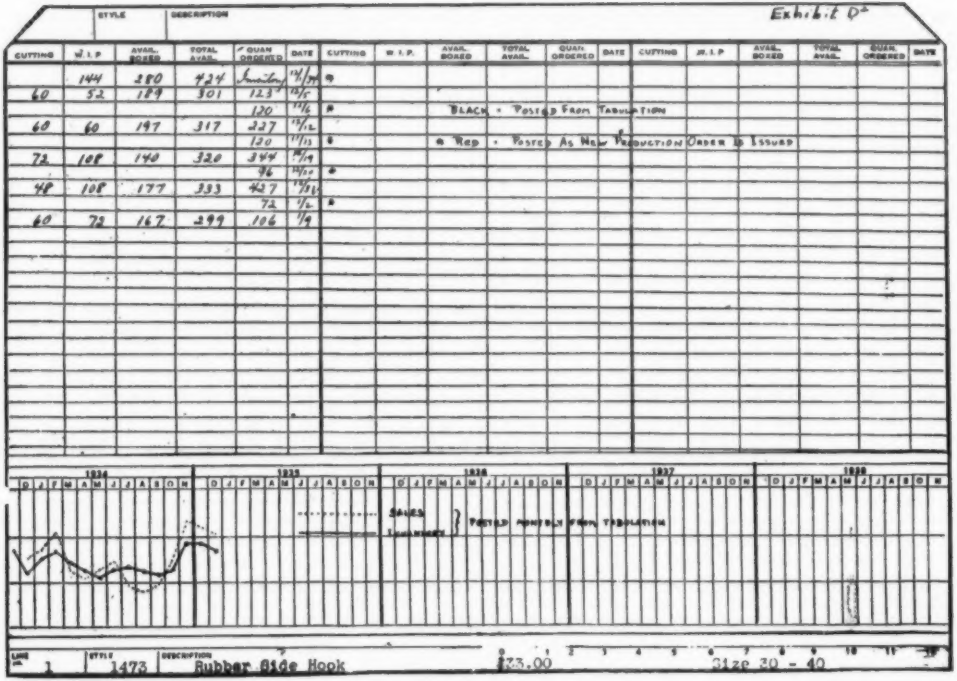


Exhibit D²
STYLE
DESCRIPTION
CUTTING
W. I. P.
AVAIL. BOXED
TOTAL AVAIL.
QUAN. ORDERED
DATE
BLACK = Posted From Tabulation
& Red = Posted As New Production Order Is Issued
1934
1935
1936
1937
1938
SALES
Posted Monthly From Tabulation
LINE No. 1
STYLE 1473
DESCRIPTION Rubber Side Hook
$23.00
Size 30 - 40

EXHIBIT D2

shown on the tabulation. She checks "Total Available Inventory" with "Quantity Ordered for Month to Date," obtaining the approximate number of weeks of available stock on hand and moves the progressive signal, at the bottom of the pocket, to the proper point. When she receives the tabulation taken off at the end of the calendar month, she not only posts as just described but she also posts, to the card in the upper part of the pocket, the total sales for the month for the style and for each size. She figures the average size sold and the cost price of that particular size is the cost price used for costing the sales of that style for that month. She also charts the sales for the month and the end-of-the month available inventory on the chart at the bottom of the pocket.

The inventory control manager makes use of both the visible index record and the tabulation. He considers, first, the style as a whole. If he places a cutting order, he posts it in red ink to the card record and moves the progressive signal out to the number of weeks supply of available stock he will then have. To properly allocate the total quantity for the style to the sizes, he refers to the tabulation, which gives the complete information for each size as well as each style as a whole.

The foreman of each production center is held responsible for the early delivery to stock of all styles and sizes appearing as back-orders on the tabulation copy which he receives. There must be a logical explanation for putting through production on styles and sizes which are already well stocked when the tabulation plainly shows that other styles and sizes are needed to fill customer's orders.

The company executives make frequent use of the visible index records where they can spot at a glance over and under-stocked conditions. The condensed information is useful in making decisions for dropping or adding styles, and in planning new sales and merchandising policies. Summary charts of each line and of all lines keep the executives informed daily as to the exact progress of the business.

Actual operation of the above procedure has furnished very satisfactory control over inventory and production. With an increase in business, the total inventory has been substantially reduced. Through a better balance of inventory by sizes, earlier and more complete filling of customers' orders has been accomplished in

EXHIBIT D2

spite of increased volume and decreased inventory. Furthermore, the degree of accuracy has proven to be far greater than by former hand methods.

Perhaps it will not be amiss, however, to sound a note of warning based upon experience. Hand methods alone do not produce the desired results. Punched cards and punched card accounting machines are not the answer when used alone. Likewise, visible index records or other fast posting media are incomplete when used alone. The combination of all three, plus control and scheduling of paper-work, makes the procedure no more expensive to operate and furnishes complete control.

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Inventory and Production Control for the Corset Industry, George W. Rood	May 15

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